Abstract

An optical bandwidth source for generating amplified spontaneous emission (ASE) across a particular wavelength range, the optical bandwidth source comprising a waveguide having a first end and a second end, and the waveguide having a plurality of separate wavelength gain subsections arranged in a serial configuration to form an active waveguide between the first end and the second end; wherein each of the wavelength gain subsections is arranged relative to one another so as to produce ASE across the particular wavelength range.

A system for generating amplified spontaneous emission (ASE) across a particular wavelength range, the system comprising an optical bandwidth source for generating the ASE across the particular wavelength range, the optical bandwidth source comprising a waveguide having a first end and a second end, and the waveguide having a plurality of separate wavelength gain subsections arranged in a serial configuration between the first end and the second end; wherein each of the wavelength gain subsections is arranged relative

to one another so as to produce ASE across the particular wavelength range; a thin-film tap configured adjacent to the second end of the waveguide to divert a portion of the ASE produced by the waveguide to an auxiliary pathway; a power monitor configured to receive the portion of the ASE diverted along the auxiliary pathway so as to monitor the ASE produced by the optical bandwidth source; an isolator configured to receive the ASE remaining from the portion diverted toward the power monitor, the isolator configured to eliminate feedback therethrough toward the waveguide; and a single-mode filter fiber pigtail configured adjacent to the isolator in opposition to the waveguide so as to receive ASE emitted from the waveguide after passing through the isolator.

A method for generating amplified spontaneous emission (ASE) across a particular wavelength range, the method comprising providing a waveguide having a first end and a second end, and the waveguide having a plurality of separate waveguide gain subsections arranged in a serial configuration to form an active waveguide between the first end and the second end; and

electrically biasing a first waveguide gain subsection and a second waveguide gain subsection from the plurality of separate waveguide gain subsections, the first waveguide gain subsection being configured between the first end and the second waveguide gain subsection, the second waveguide gain subsection being configured between the second end and the first waveguide gain subsection, and the first waveguide gain subsection configured with a quantum-well structure having a bandgap with lower energy than the second waveguide gain subsection so as to produce longer wavelength ASE at the first waveguide gain subsection than at the second waveguide gain subsection, wherein the waveguide produces ASE across the particular wavelength range at the second end thereof formed by ASE produced by the first waveguide section and the second waveguide section.